The reductive perturbation method and some of its applications

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Résumé en anglais	The reductive perturbation method is a very powerful way of deriving simplified models describing nonlinear wave propagation and interaction. In abstract frames chosen for the sake of clarity, we describe the fundamentals of the method: envelope equations, long-wave approximation, three-wave resonant interaction. We give an insight into the mathematical properties of the perturbative schemes. Then some applications are given, which either illustrate the typical situation or introduce additional features of perturbative expansions, and have their own physical interest. The applications concern either nonlinear optics, especially ultrafast, or wave propagation in ferromagnetic media, in the so-called electromagnetic or polariton range.
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